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## PUBLIC HEALTH

IN THE PAST

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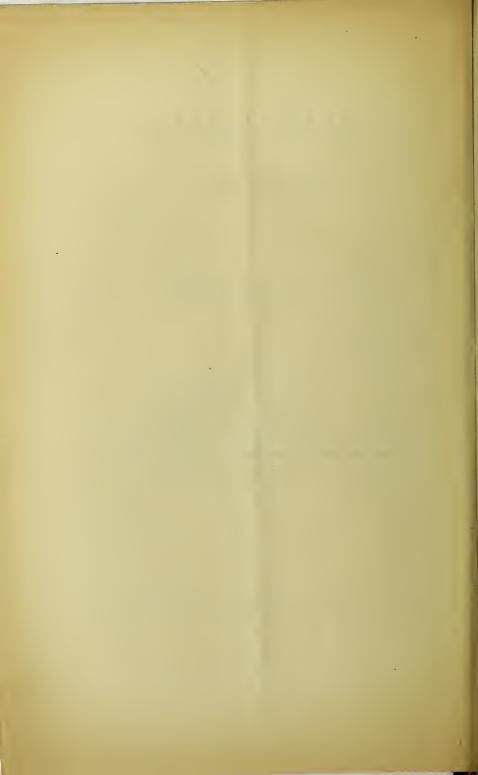
AND

## IN THE FUTURE.

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## AN INTRODUCTORY LECTURE

COURSE OF LECTURES ON PUBLIC HEALTH.

DELIVERED AT CHARING-CROSS HOSPITAL, ON TUESDAY,

MAY 19, 1874.

Gentlemen,—Those who, like myself, enjoyed the great privilege of listening to Sir William Jenner's lectures on Medicine at University College are not likely to forget the emphasis given to the opening sentence of the first lecture, that "The great aim of the physician is to prevent disease." We are gradually all beginning to recognise the truth of this doctrine, and hence it is that lectures on "Public Health" are daily becoming more and more essential in the programme of every medical school. Dr. William Farr, in a lecture delivered before the British Medical Association in 1869, speaking of the duties of medical men in regard to public health, said: "We want help; and we ask for it from the chemist, the engineer, the naturalist, the

highest statesman, and the humblest town councillor," The help of the last-named you are only likely to need when you come to apply your knowledge, but the help of the first two is surely necessary in the class-room, where the requisite knowledge of the science of public health is to be imparted to you. The thoroughly educated "sanitary officer" may be a being of the future, but as yet can hardly be said to exist; and therefore I think the Council of this school have done wisely in dividing the responsibility of teaching this important subject between a chemist, an engineer, and a physician. It is not for me to speak of the choice they have made. Of Mr. Heaton's successful teaching of chemistry in this school for many years it is needless for me to say anything. Of Mr. Eassie, who comes among us now for the first time, and whose works on sanitary engineering are well known, it is also needless for me to speak, unless it be to congratulate the school on having obtained his services. For myself, I will only say that I will do my best to merit your attention.

There may have been a time in the history of the world—when it was very young, however,—when the public health took care of itself and the conditions of existence were such as not to be likely to cause disease. When populations were very thin, when man was a noble savage almost untrammeled by clothing, living by hunting, never residing in dense crowds, leaving his effete matters

to be disinfected by the earth, the air, and the sun; frequently changing his camping-ground; and before he had learnt to become luxurious, and to spend his time in habitations artificially warmed and artificially lighted, and to eat and drink a great deal more than is good for him,—when, in fact, he lived a life more like that of a wild animal, (perhaps, he might have been rightly regarded as a wild animal)—it is possible that disease was rare, that men attained the age of some of the Biblical patriarchs, and died at last of sheer old age, without ever having had even measles or hooping-cough, which now-a-days none of us escape.

If we look at the history of the world, we find that wherever man has been collected into crowds, there disease has broken out.

The Bible is full of such instances. The Israclites in the desert were frequently smitten by pestilence, and many of the laws promulgated by Moses had most direct bearing upon public health. He at least seems to have recognised the importance of separating the sick from the healthy, and of thoroughly disinfecting the persons, clothes, and even the houses of those afflicted with leprosy or other forms of sickness. The plague which broke out amongst the hosts of Sisera, and the plague recorded by Homer as occurring at the siege of Troy, are familiar ancient examples.

It is not too much to say that, in the history of

every great eity, many chapters would have to be devoted to the history of its pestilenees.

From the fourteenth to the seventeenth centuries, at a period when art was at its zenith; when many of the eities of Europe were as erowded with inhabitants as they are at present; when Genoa, Rome, Naples, Venice, Paris, and London were already great centres of commercial or political activity, filled with inhabitants sunken for the most part in the grossest superstition,—in the prescientific era, when men lived as artificially as they do at present, without the least knowledge of warding off the evils which such an artificial existence certainly brings with it,-in an age when flourished the greatest painters, seulptors, poets, and architects which the world has seen, but before the dawn of the Baconian philosophy,—disease was more rampant, perhaps, than at any period of the world's history.

In 1348, 100,000 persons are said to have died in London alone of the "black death"—a number frightful enough, but small when compared with the 40,000,000 deaths which occurred from the same cause throughout Europe. In the sixteenth eentury there were five outbreaks of the sweating sickness, an epidemie scareely less fatal than the "black death;" and in the first sixty-six years of the seventeenth century there were five outbreaks of plague, the last of which, in 1665, claimed nearly 70,000 victims in London alone.

Let me ask you to cast your eyes at the bill of mortality for this city in the year 1661. I have selected 1661 because it seems to me to be a good average bill, neither very high nor very low; and from it we may learn what were the diseases which our ancestors had to fear in an ordinary way.

## Bill of Mortality for the Year 1661.

Abortive and stillborn . 511	French-pox 44
Aged 1302	Gout and sciatica 11
Ague and fever 3490	Grief 17
Apoplexy and suddenly 108	Griping in the guts . 1061
Bedrid 3	Hanged and made away
Bleeding 5	themselves 13
Bloody flux, scowring,	Head-mould-shot and
and flux 314	mould-fallen 28
Burnt and scalded . 4	Jaw-fallen 2
Cancer, gangrene, and	Jaundies 141
fistula 69	Imposthume 160
Canker, sore mouth, and	Killed by several acci-
thrush 95	dents 26
Childbed 224	King's evil 48
Chrisomes and Infants . 1400	Lethargy 11
Cold, cough, and hiccough 14	Leprosy 1
Colick and wind 186	Lunatick, distracted, and
Consumption and tissick 3788	frenzy 11
Convulsion 1198	Megrims 3
Cut of the stone and stone 36	Measles 188
Dropsy and tympany . 967	Mother 4
Drowned 57	Murdered, slain, and
Executed 16	shot 52
Frighted 2	Overlaid and starved . 37
Flox and small-pox . 1246	Palsy 26
Found dead in the	Plague 20
streets, fields, etc 8	Planet 3

Plurisy	11	Spotted fever and purples 335
Poisoned	2	Strangury 23
Quinsy and sore throat	13	Stopping of the stomach 170
Rickets	413	Surfeit 212
Rising of the lights .	227	Swine-pox 6
Rupture	18	Teeth and worms 1195
Scurvy	85	Vomiting 20
Sores, ulcers, broken		
and bruised legs .	61	Total 19,771
Spleen	5	

The gross mortality was 19,771, which, if we take the population of that time at half a million (for which there seem many good reasons), gives us an annual death-rate of 39.5 per 1000 people living.

The average death-rate at the present day in London may be put at 24 per 1000; so that, whereas the average age attained by the population was then only twenty-six years, it may now be stated as averaging nearly forty-two years. If, then, we may say that the science of public health has in the first two centuries of its existence lengthened the average lives of us Londoners by sixteen years, I think I need add no more facts to recommend the subject to your serious consideration.

An inspection of this bill of mortality forces many reflections upon us. There are causes of death, for example, which have now almost or completely disappeared. For instance, ague is very rarely seen at all in London, and when seen is never fatal. This fact is surely due to hygienic improvement in the matter of draining. Bloody flux, which was probably dysentery, has also almost disappeared, and from similar causes. Small-pox, which then seldom elaimed less than its thousand victims a year, has now been robbed of all its terrors, and might probably, if there were more prudence and less fanaticism abroad be quite abolished. Plague is no longer a cause of death with us. Spotted fever and the purples visit us but rarely; and seurvy, which then killed its eighty or ninety a year, has wholly vanished.

It will be obvious too, to you that there are on the list many death-eauses which, although they still remain, are far less operative now than then.

If we add together the deaths from violent causes, we find that they amount to 178. This gives us 1 violent death in every 111 deaths.

If we glanee at the first return of the Registrar-General for the year 1837, we find that out of a total, for the latter half of the year, of 24,959 deaths, 580 were from violent eauses. This gives us 1 violent death in every 43 deaths.

In the return for the year 1854, which I happen to have by me, we find that (excluding deaths from eholera) there was 1 violent death to every 35 deaths.

Thus we see that, whereas the general deathrate has steadily decreased, the deaths from violent causes have increased in an undue proportion, and we are forced to reflect that railways, machinery, and lucifer-matches have been formidable opponents to the efforts made by the science of hygiene to lower the death-rate.

In these bills of mortality there is a frequently recurring cause of death—viz., "blasted" "planet-struck,"—and in one of them we find "apoplexy, blasted, and planet-struck" grouped together as though there was some relation between These facts, as well as the consideration of the immense mortality, make us appreciate the spirit in which was written that verse of the Litany:-"From lightning and tempest; from plague, pestilence, and famine; from battle and murder, and from sudden death. Good Lord deliver us." The nomenclature, and classification of disease employed in these bills show us more plainly than could anything else the immense progress of medicine made since the dawn of science. The great mortality of these times was due in a small degree (at least, it is flattering to ourselves to think so) to the absence of anything like scientific medical knowledge. Mainly however, it was due to faulty hygienic arrangements in the matter of houses, food, water and drainage.

With regard to the houses, the following letter of Erasmus tells its own tale, and needs no comment:—

Letter of Erasmus to Francis, Physician to the Cardinal of York, 1518 or 1519.

"I often wonder and lament how it happens that for so many years Great Britain has been afflicted with pestilence without intermission, particularly with the sweating sickness, a malady which seems peculiar to itself. We read of a city being delivered from a pestilence, which had long ravaged it, by the destruction and renewal of its buildings, in accordance with the advice of some philosopher. Either I am greatly deceived, or by some such plan must England be delivered. the first place, they never think whether their doors and windows face north, south, east, or west; and in the second place, the rooms are generally so constructed that, contrary to Galen's rule, no thorough draught can be sent through Then they have a large part of the wall fitted with sheets of glass, which admit the light but keep out the air, and yet there are chinks through which they admit that filtered air, which is all the more pestilential because it has been lying there a long time. Then the floors are generally strewed with clay, and that covered with rushes, which are now and then renewed, but so as not to disturb the foundation, which sometimes remains for twenty years nursing a collection of spittle, vomits, excrements of dogs and human beings, spilt beer and fishes' bones, and other filth

that I need not mention. From this, on any elevation of temperature, there is exhaled a vapour which, in my judgment, is by no means beneficial to the human constitution. Besides, England is not only surrounded on all sides by the sea, but many parts of it are very marshy, and it is interseeted with salt rivers, to say nothing just now of the salt fish, of which the common people are wonderfully fond. I should have confidence in the island becoming more healthy if the use of rushes could be abolished, and the bedrooms so built as to be open to the sky on two or three sides, and if all the glass windows were so made as to open or shut all at once, and to shut so fast as to leave no chinks through which noxious winds could force a passage: since, as it is also sometimes healthy to admit the air, so is it sometimes healthy to exclude it. The vulgar laugh if you complain of their cloudy sky. I can only say, that for thirty years past, if I entered a room in which no one had been for some months, I would immediately begin to feel feverish. It would be an advantage if the vulgar could be persuaded to live more sparingly, and to be more moderate in the use of salt fish. Then there might be policemen who should have the charge of seeing that the streets were kept elean from filth, and they should also look after the neighbourhood of the city. I know you will laugh at me for making myself anxious about these matters, but I do so

out of friendship for a country which has so long afforded me hospitality, and where I would willingly spend the remainder of my life if I could. I doubt not that you in your wisdom know far more about these things than I do, but I wished to mention them, in order that, if my judgment should accord with yours, you may commend them to the consideration of the leading men of the country, for these things used to be the care of monarchs. I would very gladly have written to his Reverence my Lord Cardinal, but I had neither time nor anything to say, and I know well how immersed he is in the affairs of State."

As to the *diet* of our ancestors, we have abundant evidence that it was excessive in amount, and largely consisted of animal food. To this was due the constant presence of "scurvy" as a death-cause, and there can be no doubt that an ill-nourished population like that of Old London was little able to resist the ravages of the various epidemics which worked such fearful havoc amongst it.

Of the water supply of Old London I have been able to find very little reliable information. In a plan of Roman London which is given in Mr. Walter Thornbury's account of "Old and New London," several streams, tributaries of the Thames, are indicated. Langbourne, Sherbourne, and Walbrook were then boná fide rivulets, but now remain to us only in name. The Fleet River is called in the plan "the River of Wells," and with

some show of justice, for on its banks were Bridewell, Clerkenwell, Sadler's Wells, and Bagnigge Wells, as also the wells of St. Pancras. Into this river of wells flowed, from the westward, the *Old Bourne*, which we still have only in name as Holborn. This word *bourne*, which most certainly means brook, and is the same probably as the Scotch *burn*, is to be found also in the words Cranbourne, Tyburn, etc. It admits of no doubt that much of the water consumed by the inhabitants was taken direct from the brooks and from the Thames.

If we may take the names of strects and districts as any indication, we may infer that there were other brooks and wells from which the inhabitants were supplied, as the names of Shoreditch, Houndsditch, Shadwell, Goswell, Chiswell, and Holywell seem to bear witness. Private wells were probably common, and were, one would suspect, to be found in most of the better class of houses.

The earliest form of waterworks were the conduits, which were apparently reservoirs set up in some of the most crowded parts of the town, and which received their supply from the water-sources on the neighbouring high ground.

Timbs tells us that New Bond-strect was in 1760 an open field, called *Conduit Mead*, from one of the conduits which supplied this part of the town with water; and Conduit-strect received its name for the same reason. Carew Mildmay, who

died between 1780 and 1785, told Pennant that he remembered killing a woodcock on the site of Conduit Mead when it was open country.

Spring water was formerly conveyed to public reservoirs in the city by leaden pipes from various sources in the suburbs—viz., from Tyburn in 1236, from Highbury in 1438, from Hackney in 1535, and from Hoxton in 1546.

A drawing of the time of Charles I. shows a stone conduit in St. James's-square.

Lamb's Conduit was founded in 1577 by William Lamb, citizen and cloth-worker. The conduit head was in the fields near the street which bears its name, and Ormond-street, whence the water flowed in pipes 2000 yards long to the conduit on Snow-hill.

Tyburn furnished nine conduits, and with Bayswater was viewed periodically by the Lord Mayor. In 1562 it is recorded that on the occasion of viewing the conduits they dined at the Banquetting House, which stood on the site of Stratford-place, and that they killed a hare before dinner and hunted a fox afterwards. At the south end of the Serpentine you may see the remains of the conduit head which supplied Westminster-palace.

Mr. Thornbury gives us the following particulars concerning the conduits in Cheapside:—"The great conduit of Cheapside stood in the middle of the east end of the street, near its junction with the Poultry, while the little conduit was at the

west end, facing Foster-lane and Old Change. Stow, that indefatigable stitcher together of old history, describes the larger conduit curtly as bringing sweet water 'by pipes of lead underground from Tyburn for the service of the city.' It was castellated with stone and cisterned in lead about the year 1285; and again new-built and enlarged by Thomas Ham, a sheriff, in 1749." To these conduits repaired the water-carriers, "who were hired to supply the houses of the rich goldsmiths of Chepe, and who, before Sir Hugh Myddleton brought the New River to London, were indispensable to the citizens' very existence." In the reign of Edward III. the supply of water for the city seems to have been derived chiefly from the river, the local conduits being probably insufficient. We read further that in the reign of Henry V. complaints were made by the poor that the brewers, who rented the fountains and chief upper pipe of the Cheapside Conduit, also drew from the smaller pipe below, and the brewers were warned that for every future offence they would be fined 6s. 8d. There is, I believe, still at Pentonville a house called the "White Conduit Tavern," which stands partly upon the site of a notable but not very reputable place of entertainment called White Conduit House, which was much frequented by the citizens of London a century ago. There were the remains of an old stone conduit here as recently as 1831. It was built in the reign of Henry VI., and repaired in 1641. It supplied the Carthusian Friars, and afterwards the boys at the Charterhouse School. In 1654 the supply fell short, and a supply from the New River was decided on.

"The difficulty of supplying a sufficient quantity of water to the inhabitants by means of wells, conduits, and water-carriers, continued to increase until the year 1582, when Peter Morice, a Dutchman, undertook, as the inhabitants could not go to the Thames for the water, to carry the Thames to them. With this object he erected an ingenious pumping-engine in the first arch of London-bridge, worked by water-wheels driven by the rise and fall of the tide, which then rushed with great velocity through the arches. This machine forced the water through leaden pipes, which were laid into the houses of the citizens; and the power with which Morice's forcing-pumps worked was such that he was enabled to throw the water over St. Magnus's steeple, greatly to the wonderment of the Mayor and Aldermen, who assembled to witness the experiment. The machinery succeeded so well that a few years later we find the Corporation empowering the same engineer to use the second arch of London-bridge for a similar purpose. The river-pumping leases continued in the family of the Morices until 1701, when the then owner sold his rights to Sir Richard Soams for £38,000, and by him they were afterwards transferred to the New River Company."—(Smiles' "Lives of the Engineers," vol. i.)

There is no room to doubt that the water-supply was wretchedly bad; and since it is certain that these various bournes, wells, and ditches, as well as the Thames itself, received the drainage of the soil and the sewage of the inhabitants, we cannot wonder that when the germs of some of those diseases which we call zymotic, and which are eapable of being disseminated by water as well as by other means, were imported amongst the population, those zymotic maladies spread like wildfire, and proved disastrous in the manner that we read the black death, the sweating sickness, and the plague were disastrous. Even the most wholesome water which the Londoners could obtain was conveyed, we read, from Tyburn in leaden pipes and stored in a leaden eistern; and it would be curious to know how many of the inhabitants of Chepe suffered from attacks of colic or had blue lines upon the gums. It is true that the Thames, Kent, and which London is Hertfordshire waters with supplied at present seem incapable of acting upon lead, but of the power of the surface-water in the neighbourhood of London to dissolve lead we know It is at least possible that the heading "Griping in the guts," which is so common in the old bills of mortality, may have included some cases of lead-colic.

The fact that, in the reign of Edward III.,—a reign memorable for one of the most fearful pestilences that this or any other country has ever seen

—the inhabitants apparently preferred to take their water directly from the river, renders it probable that the brooks and bournes had lost even then that coarse purity of which our senses can take cognisance. Walbrook, Oldbourne, and Langbourne, the very sites of which have passed away, were probably little better than open sewers, and had lost those characteristics which a wholesome brook should have—

"With here and there a lusty trout, And here and there a grayling;"

and-

"With many a silvery water break Above the golden gravel."

The drainage of old London consisted probably of cosspools and surface-drains; and the lines of Swift, in which he describes a city shower, coarse though they be, seem worthy of quotation, as giving a vivid picture of metropolitan hygiene, even as late as the reign of Queen Anne:—

"Now from all parts the swelling kennels flow,
And bear their trophies with them as they go:
Filth of all hues and odours seem to tell
What street they sailed from by their sight and smell.
They, as each torrent drives its rapid force,
From Smithfield to St. Pulchre's shape their course,
And in huge confluence joined at Snow-hill ridge,
Fall from the conduit prone to Holborn-bridge.
Sweepings from butchers' stalls—dung, guts, and blood—
Drowned puppies, stinking sprats, all drenched in mud,
Dead cats, and turnip-tops, come tumbling down the flood."

Since the great plague of 1665, London has not,

happily, been visited by any pestilence of at all similar proportions. This is attributable to several facts, foremost among which is doubtless our improved knowledge of disease and its eauses; and we must not forget that the epochs of these last great plagues were also the epochs in which flourished two such men as William Harvey and Thomas Sydenham. Froude ("History of England," vol. i., p. 61), speaking of the change that gradually came over the English nation at the period of the Reformation, says:-"The paths trodden by the footsteps of ages were broken up; old things were passing away, and the faith and the life of ten centuries were dissolving like a dream. Chivalry was dying, the abbey and the eastle were soon together to erumble into ruins, and all the forms, desires, beliefs, convictions of the old world were passing away, never to return. A new continent had risen up beyond the western sea. floor of heaven, inlaid with stars, had sunk back into an infinite abyss of immeasurable space, and the firm earth itself, unfixed from its foundations, was seen to be but a small atom in the awful vastness of the universe! In the fabric of habit which they had so laboriously built for themselves, mankind were to remain no longer."

Philosophers had begun to inquire methodically into the meaning of, and to seek for reasonable interpretations of, natural phenomena; and the science of medicine could not—as we know it did

not—escape the influence of that general change of thought which was going on around it.

Another cause of the improved health of the metropolis was the Great Fire of 1666, which destroyed upwards of 13,000 houses, many of them of the class which Erasmus had condemned and which there can be little doubt were fever-dens of the worst description.

The only writer who has had the hardihood to advocate the systematic use of fire as a purifier is an American. Nathaniel Hawthorne, in his well-well-known novel "Transformation," says, speaking of the old buildings so common in Italy:—

"Gazing at them we recognize how undesirable it is to build the tabernacle of our brief lifetime out of permanent materials, and with a view to their being occupied by future generations. towns should be made capable of purification by fire, or by decay, within each half-century. Otherwise they become the hereditary haunts of vermin and noisomeness, besides standing apart from the possibility of such improvements as are constantly introduced into the rest of man's contrivances and accommodations. It is beautiful, no doubt, and exceedingly satisfactory to some of our natural instincts, to imagine our far posterity dwelling under the same rooftree as ourselves. Still, when people insist on building indestructible houses, they incur, or their children do, a misfortune analogous to that of the Sibyl when she obtained the grievous boon

of immortality. So, we may build almost immortal habitations, it is true; but we cannot keep them from growing old, musty, and unwholesome, dreary, full of death-scents, ghosts, and murder-stains; in short, habitations such as one sees everywhere in Italy, be they hovels or palaees."

A third cause, and a cause which has not, I think, been sufficiently recognized, was the construction of waterworks for bringing wholesome water to London.

It is stated that, as early as the reign of Queen Elizabeth, leave was granted to the citizens to convey a stream to London from any part of Middlesex or Hertfordshire. It was not, however, till 1609 that Mr. Hugh Myddleton, a Welsh goldsmith, who had enriched himself by mines in Cardiganshire, persuaded the Common Council to transfer their powers to him, and he undertook in four years, at his own risk and charge, to bring the Chadwell, and Amwell Springs from Hertfordshire to London by a route more than thirty-eight miles long. The seheme met with much opposition from the landholders of Middlesex and Hertfordshire, and before the work was completed the projector's resources were exhausted, and he was obliged to petition the King to assist him.

The date of the opening of the New River Head at Clerkenwell was September 29, 1613. "It was a considerable time, however," says Thornbury, "before the New River water eame into full use, and for the first nincteen years the annual profit scarcely amounted to twelve shillings a share."

Smiles computes the cost of the New River at £18,000. The pipes at first used were of wood. The leakage was so great through these wooden pipes that it is computed that about a quarter of the whole water was wasted. When these wooden pipes were in vogue-which we may be sure quickly rotted—it is no wonder that a prejudice existed against them. Water-carriers therefore long continued to drive a trade in water carried directly from the New River Head or the River itself, their cry being "Fresh and Fair New River Water! None of your Pipe Sludge!" At the source of the New River at Chadwell, near Ware, a memorial stone has been erected bearing the following inscription. "Sacred to the memory of Sir Hugh Myddleton, Baronet, whose successful care, assisted by the patronage of his King, conveyed this stream to London: an immortal work, since no man cannot more nearly imitate the Deity than in bestowing Health."

Besides the prevention of disease, one of the great aims of the science of public health is, or most undoubtedly ought to be, the improvement of the race. We have only to look at the children—pale, wretched, pinched, crooked-limbed, and fighting with disease—who swarm in the London streets, and compare them with the sturdy, rosychecked boys and girls that one encounters in well-

carcd-for country districts, to be sure that the town-bred children of the poor, whose resources are not sufficient to counteract the adverse surroundings which encompass them, must be vastly inferior as citizens—physically as well as morally—to the children who enjoy from their birth all the advantages of fresh air, free exercise, and healthy parentage.

The theory of "natural selection," broached a few years since, ought certainly to have a great influence upon the science of public health and upon the enactments which may be necessary for the forwarding of that science. According to the theories of natural selection, the weak members of a family are sure to be worsted in the battle of life, and the strong will alone survive the struggle and bear off the rewards of victory. In this way the gradual improvement of the race is insured by the eradication of the weeds and the giving of more room for the healthy plants to flourish in.

Now, the science of public health must have the effect, and doubtless has had the effect, of lessening the enemies with which man has to contend, and thus there can be no doubt that many more sickly weeds survive to manhood than formerly; and therefore against the great good which public health enactments doubtlessly effect for us, must be placed the counterbalancing reflection that excessive protection interferes with that process which bears good fruit in the long run—I mean "natural selection."

"To Plato," says Lord Macaulay, "the seience of medicine appeared to be of very disputable advantage. He did not, indeed, object to quick cures for acute disorders, or for injuries produced by aceidents; but the art which resists the slow sap of a chronic disease, which repairs frames enervated by lust, swollen by gluttony, or inflamed by wine which encourages sensuality by mitigating the natural punishment of the sensualist, and prolongs existence when the intellect has ceased to retain its entire energy, - had no share of his esteem." "The exercise of the art of medicine ought, he said, to be tolerated so far as that art may serve to eure the oecasional distempers of men whose constitutions are good. As to those who have bad constitutions, let them die; and the sooner the better."

If this Platonian doetrine were acted upon, there can be little doubt that the remnant of the present population which would remain would be a remnant having robust constitutions, and therefore calculated to transmit strength and stamina to the generations which should succeed them.

In centuries gone by the elimination of the physically, mentally, or morally weak was more abundantly effected than at present. All the diseases bred of ignorance and overcrowding assailed the population in the most virulent manner; and perhaps I shall not be thought wanting in respect to the mighty dead if I put forward a doubt as to whether the treatment of the physicians of that time,

with their antiphlogisties, bleedings, purgings, hot regimens, and barbarous nostrums, had even the merit of doing no harm. It must have been very seldom that the prescriptions and remedies ran eounter to the ideas of Plato by repairing the enervated frame or resisting the slow sap of a chronic disease.

The mentally weak were eliminated in the same way. In those dark ages a man who became mentally deranged was regarded from different points of view, according to the form which his derangement took.

"If," says Dr. Maudsley, "the ravings of the person took a religious turn, and his life was a fanatical practice of some extraordinary penance, ... he was thought to have reached the ideal of human excellence, and was eanonised as a saint; more often his state was deemed to be a possession by the devil or other evil spirit, or the degrading effect of a soul enslaved by sin. . . . It was the natural result of such views of madness that men should treat him whom they believed to have a devil in him, as they would have treated the devil eould they have had the good fortune to lay hold of him. When he was not put to death as a heretie or a criminal, he was confined in a dungeon, where he lay chained on straw; his food was thrown in, and his straw raked out through the bars; sightseers went to see him as they went to see the wild beasts—for amusement; he was eowed by the

whip or other instrument of punishment, and was more neglected and worse treated than if he had been a wild beast. Many insane persons too were, without doubt, executed as witches or as persons who had, through witcheraft, entered into compact with Satan." In this way, the insane were quickly or slowly, but nevertheless surely, to a great extent eliminated from the ranks of the people.

The elimination of the morally depraved was effected in a no less thorough manner. By an Act of Henry VIII. it was enacted that vagrants, beggars, and such as could give no good account of themselves, should suffer as follows:—

If eaught begging once, being neither aged nor infirm, he was whipped at the eart's tail. If caught a second time, his ear was slit or bored through with a hot iron. If caught a third time, being thereby proved to be of no use upon this earth, but to live upon it only to his own hurt and to that of others, he suffered death as a felon.

Thieves, when convicted, were generally sentenced to death, and the sentence was not infrequently carried out; and although Mr. Froude discredits the assertion which has been made that as many as 72,000 criminals were executed in the reign of Henry VIII., there can be no doubt that the number of such executions was enormously great. Thus we see that disease, the State, and the gallows were great eliminators of worthless characters; and although, through these as well as

other—and probably more important—causes, the population remained numerically almost at a stand-still, there can be no doubt that the race who conquered the Spanish Armada, and which produced a Shakespeare, a Raleigh, a Drake, a Bacon, was a race which had approached to no mean degree of physical and mental excellence, and that too almost without the aid of sanitary legislation or compulsory education.

The nineteenth century differs from the sixteenth in this—that it is far more benevolent in its treatment of the sick and erring. At the last census in 1871 it was found that of the 3,250,000 persons inhabiting the metropolis, no less than 60,000 were living as the inhabitants of workhouses, hospitals, asylums, and prisons, at the expense of the rest.

We cherish our weeds. The patient with mental disease is allowed to go abroad as soon as the solicitous care of the physician has restored to him his reason; the hardest and most inveterate seoundrels in our prisons are often set at liberty with a ticket of leave; prostitutes are still permitted except in a few favoured localities to ply their calling and disseminate disease without restraint; and it is hardly too much to say that the hangman's office has become a sinecure. We adopt the same tacties with mental and moral diseases as we do with physical maladies, and in our treatment of them we are actuated by the feeling that

prevention is better than cure. And so indeed it is; and no one will deny that, for all concerned—the healthy as well as the sick and erring—the less harsh we are in the treatment of our unfortunate brethren, the better. It is certainly more rational, more humane, and more in accordance with Christian doctrine to prevent than to be ready to adopt capital measures for eradication.

The only objection which can be raised against our humane course of action, arises from the knowledge that much disease both of mind and body is hereditary; and when we reflect that the consumptive when he leaves the hospital, the madman when he quits the asylum, the habitual criminal when he gets his discharge or ticket of leave, and the syphilitic prostitute, are all capable of transmitting their several taints to generations yet unborn, we can hardly repress the doubt which arises in our minds as to whether Plato was not in the right after all.

"All persons," says Dr. Maudsley, "who have made criminals their study, recognise a distinct criminal class of beings, who herd together in our large cities in a thieves' quarter, giving themselves up to intemperance, rioting in debauchery, without regard to marriage ties or the bars of consanguinity, and propagating a criminal population of debauched beings. . . . In addition to the perversion or entire absence of moral sense, which experience of habitual criminals brings prominently

out, other important facts disclosed by the investigation of their family histories are, that a considerable proportion of them are weak-minded or epileptic, or become insane, or that they spring from families in which insanity, epilepsy, or some other neurosis exists, and that the diseases from which they suffer and of which they die are chiefly tubercular diseases and diseases of the nervous system. Crime is a sort of outlet in which their unsound tendencies are discharged; they would go mad if they were not criminals, and they do not go mad because they are criminals."

The State has so much respect for the liberty of the subject that one ean hardly expect that any measures will ever be taken to prevent the marriage of those tainted with hereditary siekness or to stop the propagating power of habitual criminals. it is harder to understand the unwillingness of English Governments to interfere with the liberty of the prostitute. Dr. Parkes says-"A woman chooses to follow a dangerous trade—as dangerous as if she stood at the corner of the street exploding gunpowder. By practising this trade she ought at once to bring herself under the law, and the State must take what precautions it can to prevent her doing misehief. The State cannot prevent prostitution. We shall see no return to the stern old Scandinavian law, which punished the prostitute with stripes and death; but it is no more interference with the liberty of the subject to prevent a

woman from propagating syphilis, than it would be to prevent her propagating small-pox."

Dr. Acland, in a lecture on "National Health," delivered in 1871, mentions the following case:—
"A girl, having been seduced, entered a workhouse; a female child was born. She was brought up in the union, and was there at school till nearly of age. She went out, straightway became first a prostitute, and then a syphilitic; returned to the workhouse, and brought forth a syphilitic infant, to be reared, like her mother, with difficulty. There she lives in misery, and may perhaps repeat the dismal tragedy of her grandparent and her parent at the cost of the nation."

This is a solitary instance recorded by a physician to whom the facts of the case were accidentally known. Who can say how many such cases go unrecorded both in and out of workhouses, or what is the amount of evil worked in this country by an unchecked system of prostitution, which is capable of undermining not only the health of the present but of succeeding generations?

The only check which we have as yet attempted to place upon certain of the evils last enumerated—the evil of unrestrained marriage between people who are physically or mentally deranged; the evil of allowing habitual criminals to wander among us and perpetuate their degraded class; and the evil of respecting the liberty of the prostitute at the expense of the health of citizens who follow

honest callings—is the moral check. We have got a compulsory Education Act, and, if evasion of it be prevented, we may hope that within sixty years or so from the present date every British subject will possess the means of educating himself if he choose—i.e., a knowledge of reading, writing, and a little arithmetic.

How many thousands of generations it will take before education stifles the insane germs which lurk in the minds of not a few of us, or at what time, if ever, the world will see the prostitute, by the study of divine philosophy, led to see the errors of her ways, it would be waste of time to speculate.

"An acrc in Middlesex," says Macaulay, "is better than a principality in Utopia. The smallest actual good is better than the most magnificent promises of impossibilities. The wise man of the Stoics would no doubt be a grander object than a steam-engine; but there are steam-engines, and the wise man of the Stoics is yet to be born!"

Besides the Education Act, which there can be no doubt will do much to develop the mental and moral excellence of the nation, there are other means of improving the national health which surely ought not to be neglected. Perfect health, we are told, consists of "a sound mind in a sound body"—Mens sana in corpore sano. The ideas of the ancients, that body and mind were distinct and separable from each other, have long since exploded, and, according to modern views, a sound

mind is merely the outcome of a perfectly sound body. If, therefore, we are to have a national system of mental training, surely we ought to have a national system of physical training as well. For us, whose masses are for the most part centred in densely populated and unhealthy eities, this physical training seems doubly important. early days of our history, when the feudal system still existed among us, every able-bodied man in the country was trained to bear arms; and although there was no standing army, no class who made fighting their sole profession, and physical training their principal aim in life, we were then dreaded by our foes, and rightly regarded as the fiercest nation in the world. In whatever way the physieal training is to be effected—whether by a term of compulsory military or naval service or otherwise, - there can be no doubt that it is absolutely necessary; and if it be not earried out, and with women as well as with men, we shall undergo a great risk of physical deterioration, because a large proportion of the inhabitants of our cities are wholly unable to receive physical training in any shape except upon compulsion and at the expense of the State.

